(1) Do DoCarmo page 77 No 1 (a) and (b) (geodesics on a surface of revolution).

(2) Do DoCarmo page 77 No 1 (c)

(3) Do DoCarmo page 77 No 1 (d)

(4) Describe the behaviour of all geodesics on the following surfaces of revolution, where $f(s)$ is the distance to the axis of rotation:

(a) $f(s) = e^s$
(b) $f(s) = \cosh s$
(c) $f(s) = \frac{1}{1+s^2}$
(d) a torus of revolution where the circle has center $(0, R)$ and radius $r < R$.

In each of the above examples describe all closed geodesics.